UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/688,095	10/17/2003	Xubin Song	10541-1868	9092

7590 01/13/2006

Robert K. Fergan, Esq.
BRINKS HOFER GILSON & LIONE
P.O. Box 10395
Chicago, IL 60610

EXAMINER	
NGUYEN, THU V	
ART UNIT	PAPER NUMBER
3661	

DATE MAILED: 01/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/688,095	SONG ET AL.	
	Examiner	Art Unit	
	Thu Nguyen	3661	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 May 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *4-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *4-10 and 14-16* is/are rejected.

7)☐ Claim(s) *11-13 and 17-19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

The amendment filed on May 11, 2005 has been entered. By this amendment, claims 1-3 have been canceled, claims 14-19 have been added and claims 4-19 are now pending in the application.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki (US 5,911,768) in view of Wada et al (US 5,101,355) (enclosed IDS).

As per claim 4, Sasaki teaches a system for controlling an active suspension of a vehicle having bounce, roll and pitch transmissibility, the system comprises: a tunable device for adjusting stiffness and damping of the active suspension (col.3, lines 14-48, lines 51-55; col.4, lines 53-67; col.5, lines 1-19); a controller for sensing the frequencies of vibration and providing a control signal based on a bounce, roll, and pitch components at the sense frequency (col.5, lines 66-67; col.6, lines 1-1-25); Sasaki further teaches the ride control component (col.7, lines 65-67; col.8, lines 10), the dive/squad control component (col.5, lines 56-58), further, since the handling control component also means setting large stiffness, and since Sasaki teaches a component for controlling large stiffness, Sasaki encompasses teaching the handling control component. Sasaki

does not explicitly disclose that the bounce, pitch and roll vary with respect to a frequency of vibration. However, since Sasaki teaches using sensed vertical acceleration to determining the bounce, pitch and roll (col.5, lines 34-50), further, it would have been well known that the vertical acceleration vary with the frequency of vibration as taught by Wada et al (abs, col.3, lines 61-64; col.4, lines 20-68; col.5, line 68; col.6, lines 12-41). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to vary the bounce, pitch and roll of the vehicle with respect to the frequency of vibration in order to correct the spring vibrations as taught by Wada in col.1, lines 50-63.

As per claim 6, Sasaki teaches including bounce, roll and pitch control component (col.5, lines 44-45; col.6, lines 1-16; col.10, lines 17-67; col.11, lines 1-67; col.12, lines 1-6).

As per claim 5, 7, Sasaki teaches adjusting the hard and soft degree for suspension control (col.4, lines 53-67; col.5, lines 1-29), and Sasaki teaches a ride control based on the bounce, pitch and roll (col.5, lines 44-45; col.6, lines 1-16; col.10, lines 17-67; col.11, lines 1-67; col.12, lines 1-6). Further selecting values ϑ_i, I_i such that the sum of ϑ_i, or I_I is one so that the control signal and the ride control is determined from a ratio of degree of stiffness, or ratios of bounce, pitches and roll would have been both well known and obvious in mathematic concept.

3. Claims 8-10, 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sasaki (US 5,911,768) in view of Wada et al (US 5,101,355) (enclosed IDS) and further in view of Sugasawa et al (US 5,075,855).

As per claim 8-10, Sugasawa teaches including a plurality of control strategies corresponding to a plurality of frequency ranges, and control based on a control strategy (abstract; col.4, lines 48-59; col.12, lines 31-45). Further with respect to claim 9-10, Sugawaga does not explicitly teach the claimed frequency range and the corresponding control strategy. However, since Sugawaga teaches several frequency ranges corresponding to different characteristic of the road and vibration of the vehicle (col.18, lines 25-50), and the capability of varying damping force (col.12, lines 35-45), providing frequency range and strategies as claimed are just an obvious design choice. Moreover, Wada suggests different frequency ranges corresponding to different characteristic of the vibration of the vehicle (col.5, lines 9-22). It would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide different control strategies according to different frequency ranges as taught by Sugasawa or by Wada in the system of Sasaki in order to adjust the stiffness of the suspension system according to different vibration frequencies.

As per claim 14, refer to claim 4 above. Sasaki teaches a compressible strut (col.3, lines 56-67; col.4, lines 1-52). Furthermore, since Sasaki teaches the strut structure including a cylinder, a piston, a reservoir (col.3, lines 58-63), moreover, Sagasawa teaches the well known fluid strut structure (col.19, lines 18-28). It would have been obvious to a person of ordinary

skill in the art at the time the invention was made to use the fluid strut structure of the shock absorber of Sasaki in order to facilitate controlling shock absorbance in accordance with the frequency and the amplitude of the accelerators.

As per claim 15-16, refer to claims 4, 8-9 above. Wada teaches including a plurality of frequency ranges (high frequency, low frequency) and a plurality of control strategies (col.5, lines 9-22), and controlling the suspension based on the control strategy corresponding to a frequency range (col.5, lines 9-22). Wada teaches at least the low and high frequency ranges, Wada further teaches the medium damping force, and further teaches that the damping forces (hard, medium and soft) are determined based on the predetermined frequencies and amplitude of the signal, assigning the frequency ranges for the corresponding medium sampling force would have been obvious. Moreover, setting up other frequency ranges such as body mode frequency range, wheel hop frequency range, etc. and naming the strategies would have been an obvious matter of design choice depending how many levels of damping control of the suspension the designer wants to have.

Allowable Subject Matter

4. Claims 11-13, 17-19 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter:

Prior arts of record do not disclose a system for controlling an active suspension of a vehicle taught in claim 1, or claim 15 in combination with claim 10-11, or 12 or 13, or 17-19 respectively in which the bounce control component, the pitch control component, and the roll control component are calculated as taught in claims 11, 12, 13, and 17-19.

Response to Arguments

6. Applicant's arguments filed May 11, 2005 have been fully considered but they are not persuasive.

In response to applicant's argument on page 15, first paragraph, refer to the explanation in claims 4, 8-9, 14 and 15 above.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Furthermore, the added reference just provides support on the well known features asserted by the examiner in the office action issued on August 27, 2004. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thu Nguyen whose telephone number is (571) 272-6967. The examiner can normally be reached on T-F (7:30-6:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

July 28, 2005

THU V. NGUYEN
PRIMARY EXAMINER